

Is Prism adaptation an option to treat the Pusher syndrome?

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Background: Patients with severe brain damage often show contraversive lateropulsion (“pusher syndrome”, PS). Prism adaptation (PA) leads to a realignment of the body and visual coordinates, and, therefore, may be an effective treatment option for PS.

Method: The study design consisted of a multiple (n = 14) case experimental design intervention. PS patients in a sub-acute status following a right hemisphere cerebrovascular accident (CVA) and with a severe PS (as measured by the contraversive pusher scale (CPS) and by a quantified deviation in sitting balance of at least 10 percent) were included. After three baseline measurements (Baseline 1-3) with an interval of three days (days 1, 4, 7), three intervention sessions with PA followed at intervals of three days (days 10, 13, 16). After 14 days (day 30), a follow-up measurement was executed. The quantitatively measured change in sitting balance was the primary outcome score. We also examined the grade of muscle strength, the Early Rehabilitation Bartel Index (ERBI), and the Functional Independence Measure (FIM) as secondary outcome scores, comparing these scores on day 1 with those of the follow-up. Lesion localization was transferred manually into MRIcron standard brain atlas.

Results: Patients showed overlapping lesions in the right putamen, precentral gyrus, and corona radiata. Each PA intervention improved sitting balance significantly, indicating an immediate effect of PA on PS. However, PA effects dropped partly over the period of 3 days, and, as the baseline phase showed, significant recovery also occurred independently of PA. Patients improved on the CPS, the ERBI, FIM, and muscle strength, too, but because of dropping PA effects, it cannot be concluded that this improvement was related to the PA sessions.

Conclusion: Prism adaptation led to immediate remediation of the pusher symptom. However, it remains unclear if it has any enduring effect on recovery from PS.